



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,557	07/30/2003	Christos J Georgiou	BUR920030040US1	1556

7590 08/07/2007
Andrew M. Calderon
Greenblum and Bernstein P.L.C.
1950 Roland Clarke Place
Reston, VA 20191

EXAMINER

COOPER, SHATIQUE S

ART UNIT	PAPER NUMBER
----------	--------------

2616

MAIL DATE	DELIVERY MODE
-----------	---------------

08/07/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/604,557

Applicant(s)

GEORGIU ET AL.

Examiner

Shatque S. Cooper

Art Unit

2609

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) ✓
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/11/10 & 7/20/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Response to Amendment

Applicant's Amendment filed 5/15/2007 is acknowledged.

Claims 1-20 are pending.

Claims 5, 8, 9, 20 are amended.

- 1.) In the remark on pg.10 of the Amendment, Examiner withdraws the 35 U.S.C 101 rejection of claim 20 enlighten of the amendment.
- 2.) In the remark on pg.11 of the Amendment, rejection of claims 9,15,16,18 and 19 under 35 U.S.C.102 (e) is improper due to Examiner use a 35 U.S.C 103(a) for the independent claim 8.
- 3.) In the remark on pg.12 of the Amendment, Applicant contends that Rana does not show all of the feature of claims 1-4. Also applicant disclose that Rana does not disclose, the method detects breaks in sequence for one or more packet flows by detecting out-of-sequence packets and enters the segment of sequential packets into a separate memory area, such as a linked list, for a particular flow. Thus, in operation, for every flow, all packets from a single flow received in order are stored in memory as a linked list.

In response to Applicant's arguments Rana teach all limitation of claim 1 but fails to disclose the method wherein the out-of-order packets is enter into a new linked list. Therefore Examiner rejects the claim using Rana in view of Lassers.

- 4.) In the remark on pg.15 of the Amendment, Applicant contends that the 35 U.S.C. 103 rejection of claims 5-8, 10-14, 17 and 20, Rana et al. in view of Maher, III, is respectfully traversed. Applicant also submits the claims 5-7 depends from an allowable base claim.

Art Unit: 2616

The Examiner respectfully disagrees. In response to applicants argument Rana et al. in view of Maher, III, teaches all the limitations but fails to specifically disclose the creating a linked list each time a new data packet is received out of order as claimed in 8 and 20.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, are rejected under 35 U.S.C. 103(a) as being unpatentable over Rana et al. (6,781,992 B1) in view of Lassers (EP Patent Application 1180880 A1).

Regarding **claim 1**, Rana et al. discloses a method of reordering data packets received out of order (**col.2, lines 27-29**), the method comprising the steps of:

reading context information from a received data packet to determine whether the received packet is in a given sequence (**col.2, lines 45-48, Packet Assembler uses unique fields in the data to access a session ID**);

comparing said context information of the received data packet to an expected sequence count for the given sequence, and storing the received packet with said context information in a memory as a linked list when there is a match, all received packets in the linked list being in order (**col.3, lines 44-49, PDU assembler receive data from input interface, can perform several functions: compare context and sequence information**);

Art Unit: 2616

Rana et al. fails to disclose the method of creating a new linked list for new out-of-order packets.

Therefore Lassers disclose the method wherein, creating a new linked list each time a new data packet is received out-of-order (**col.8, lines 57-col.9, lines 1-2**);

It would have been obvious to person of ordinary skill in the art at the time of the invention to include the process of implementing a new linked list every time a new packet is out-of-order.

linking in order all subsequent packets received in order to the new linked list (**col.4, lines 36-39**);

constructing a reorder table of addresses of the first packet for all linked lists (**col.4, lines 1-13, the fields extracted from the header by PDU assembler, table of address can be constructed in the PDU or packet assembler**);

and reading packets out of the memory in an order specified by the reorder table (**col.4, lines 57-60**).

Regarding **claim 2**, Rana et al. discloses a method, wherein the comparing steps includes incrementing the expected sequence count (**col.7, lines 56-61, the fragment assembly flow chart can be used for the incrementing of the sequence count**).

Regarding **claim 3**, Rana et al. discloses a method, wherein comparing context information includes comparing a flow type indicator (**col.5, lines 31-34, "time stamp" (indicator) to make certain that nothing affects the traffic flow**).

Art Unit: 2616

Regarding **claim 4**, Rana et al. discloses a method, steps of constructing a transmission table of one or more entries, each entry including at least one of a flow indicator (**col.5, lines 31-34, "time stamp" (indicator) to make certain that nothing affects the traffic flow**), a sequence number and a memory address associated any of the linked lists (**col.4, lines 36-39**), the flow indicator being associated with the reorder table (**col.5, lines 55-61, each data packet consist of the flow indicator to track the traffic flow, a session ID so the linked list can control the source and destination of the packet**).

Claims 5, 6 and 7, rejected under 35 U.S.C. 103(a) as being unpatentable over Rana et al. in view of Lassers as applied above and in view of Maher, III et al. (US Patent Number 6,381,242)

Regarding **claim 5**, Rana et al. ^{Lassers} disclose all the limitations above, but fails to specifically disclose the method of the reorder table.

Maher III et al. discloses a method wherein: the constructing a reorder table includes one or more entries, each entry having a sequence number of the first packet of one linked list (**col.8, lines 51-54**); and the reading packets step includes the steps of: accessing the one or more transmission table entries in turn, and for each entry (**col.9, lines 11-16**), using the flow indicator (**col.6, lines 29-35**) to locate the associated reorder table; searching the associated reorder table to locate any entry having the sequence number matching the accessed transmission table entry's sequence number (**col.9, lines 11-13**); and reading all packets in order from a linked list associated with the located any entry.

Art Unit: 2616

Therefore, it would have been obvious to person of ordinary skill in the art at the time of the invention was made to provide the method of the reorder table to ensure that the reorder packets are being routing to their destination to make certain that all packets are being transmitted throughout the network.

Regarding **claim 6**, Rana et al. ^{Lessors} fails to specifically disclose the method of the reorder table.

Maier III et al. discloses a method wherein the constructing a reorder table step includes constructing one or more reorder tables, each of the one or more reorder table associated with one or more packet flows (col.9, lines 13-16).

Therefore, it would have been obvious to person of ordinary skill in the art at the time of the invention was made to provide with the method of constructing the reorder table to insure that the reorder packets are transmitted. The content processor only scans data in order and the active list keeps track of the active packets session ID.

Regarding **claim 7**, Rana et al. fails to specifically disclose the method of accessing the reorder table.

Maier III et al. discloses a method wherein the accessing the one or more transmission table entries, in turn, provides a relative ordering among all the read data packets between one or more packet flows (col.9, lines 13-20).

Art Unit: 2616

Therefore, it would have been obvious to person of ordinary skill in the art at the time of the invention was made to provide the active control list and a linked list to retrieve the next context, so the out of order packets are transmitted with a session ID that is active.

Claims 8, 10-14 and 20, are rejected under 35 U.S.C. 103(a) as being unpatentable over Maher III et al. (US Patent Number 6,381,242) in view of Lassers (EP 1180880 A1).

Regarding claim 8 Maher III et al. discloses a method and also discloses a computer readable medium as claimed in claim 20. For the software development in Maher et al, discloses network processor (NPU) (col.2, lines 17-21), which has enable those skilled in the art to implement systems and methods that operate faster, more efficiently, and fraction of the cost of hardware implementations.

Maher III et al. discloses a method for ordering packets, the method comprising the steps of: detecting at least one of an in-sequence and an out-of-sequence packet chain in one or more packet flows (**col.8, lines 42-46**); storing the detected at least one of the in-sequence and the out-of-sequence packet chain in a memory (**col.8, lines 46-51**); providing a sequence number with each of the stored in-sequence and the out-of-sequence packet chain (**col.8, lines 56-59**); associating the sequence number with an address in the memory of at least one of the stored in-sequence and the out-of-sequence packet chain (**col.6,lines 20-22**); and ordering the at least one of the in-sequence and the out-of-sequence packet chain from the memory based on the associated sequence number to provide one or more packet flows all in-sequence (**col.9, lines 6-13**) and;

Maher fails to disclose the method of implementing the new linked list for out of order packets.

Art Unit: 2616

Therefore, Lassers disclose, creating a linked list each time a new data packet is received out-of-sequence and linking in order all subsequent packets received in sequence to the linked list (col.8 & 9, lines 57-2).

It would have been obvious to person of ordinary skill in the art at the time of the invention to include the process of implementing a new linked list every time a new packet is out-of-order.

Regarding **claim 10**, Maher discloses a method wherein the storing step includes linking one or more received packets into a linked list associated with the sequence number of each of the at least one in-sequence and the out-of-sequence packet chain (col.8, lines 48-54).

Regarding **claim 11**, Maher III. et al discloses a method wherein the sequence number is a list of sequence numbers, each associated with at least one of the in-sequence and the out-of-sequence packet chain (col. 8, lines 56-59).

Regarding **claim 12**, Maher III et al discloses a method wherein the associating step includes the steps of:

determining if a context switch is necessary by checking a packet context information in a received packet (col.8, lines 42-46); and

switching context when the packet context information has changed for a next received packet, the packet context information including flow context information (col.9, lines 6-11).

Art Unit: 2616

Regarding **claim 13**, Maher III et al. disclose a method wherein the associating step further includes entering an entry so that a temporal order of the at least one of the in-sequence and the out-of-sequence packet chain is maintained (**col.5, lines 41-46**).

Regarding **claim 14**, Maher III et al. discloses a method of building a table by entering the sequence number of a first packet of any of the packet chains and an address in the memory of the stored at least one of the in-sequence and the out-of-sequence packet chain of the any of the packet chains (**col.8, lines 48-57**).

Claim 9, 15-19, are rejected under 35 U.S.C. 103(a) as being unpatentable over Maher III et al. (US Patent Number 6,381,242) in view of Lassers (EP 1180880 A1) as applied to claim 8 above and in view of Rana et al (US Patent Number 6,781,992).

Regarding **claim 9**, Maher III et al. and Lassers. teaches of the limitations but fail to provide the initializing of the sequence count.

Rana et al. discloses a method wherein the detecting step includes the steps of: initializing an expected sequence count for each of the one or more packet flows; comparing a received sequence count to the expected sequence count for the packet flow associated with a currently received packet; and setting the expected sequence count for the packet flow associated with the currently received packet to the received sequence count when unequal; and incrementing the expected sequence count for the packet flow associated with the currently received packet (**col.7, lines 56-67 and col.8, lines 1-6, the fragment assembly flow chart can be use to achieve the sequence count and to increment it**).

Art Unit: 2616

It would have been obvious to person skill in the art at the time of the invention was made to provide the step of initializing for each packet.

Regarding **claim 15**, Maher and Lasser fails to disclose searching a reorder table based on the non-null table entry.

Rana et al. discloses, wherein the ordering step includes the steps of: accessing a transmission table to retrieve a next non-null entry (**col.7, lines 57-61**); searching a reorder table based on the next non-null transmission table entry to locate a reorder table entry with a lowest sequence number and at least equal to or less than the sequence number in the next non-null transmission table entry (**col.8, lines 4-6**); transmitting all packets in the at least one of the in-sequence and the out-of-sequence packet chain identified in the located reorder table entry so that the packets are sent in sequence order (**col.5, lines 24-28**) , and incrementing a transmitted packet count for each transmitted packet; and removing the located reorder entry.

It would have been obvious to person of ordinary skill in the art at the time of the invention was made to include a test to determine the start offset and its expected offset.

Regarding **claim 16**, Maher and Lasser fail to disclose a null value of the packet entry.

Rana et al. disclose, steps of returning to the transmission table to access another next non-null entry (**col.7, lines 57-61, after receiving a new packet the pointer is set to the next block, which is set to a null value**).

It would have been obvious to person of ordinary skill in the art at the time of the invention was made to include the null value in the link list memory.

Regarding **claim 17**, Maher III et al. further disclose a method wherein the reorder table and the transmitted packet count are associated with one of the one or more packet flows (**col.9, lines 13-16**).

Regarding **claim 18**, Maher and Lassers fails to disclose the null value each entry.

Rana et al. discloses a method, wherein the searching a reorder step includes searching the reorder table based on the next non-null transmission table entry to locate the reorder table entry with the sequence number next to be sent as indicated by the transmitted packet count (**col.4, lines 1-7, PDU assembler assigns the session ID and all the session ID are stored in the session CAM**).

It would have been obvious to person of ordinary skill in the art at the time of the invention to include the reorder table based on the null value entry to locate the entry with the sequence number to sent properly throughout the network.

Regarding **claim 19**, Maher III et al and Lasser fails to disclose retrieving sequence number from an entry in the table.

Rana et al. disclose a method wherein the ordering step includes: retrieving an entry from a transmission table associated with one or more reorder tables (**col.3, lines 30-34 and col.5, lines 10-12, the queue engine reorder out of sequence packets and the input interface keeps track of what is being transmitted col.3, lines 40-42**); identifying locations of the in-sequence and out-of-sequence packet chains (**col.4, lines 4-6, where the session ID is the identification of each session**); searching the associated one or more reorder tables for the sequence number associated with one of the in-sequence and out-of-sequence corresponding to the retrieved entry

Art Unit: 2616

(col.4, lines 4-6, the session CAM keeps track of the sequence number of each packet); determining whether the sequence number associated with the one of in-sequence and out-of-sequence packet chain is a minimal sequence number **(col.4, lines 14-17, the PDU assembler can determine the associated number with an in-sequence or out-sequence packet);** if so, then transmit in order the packet chain associated with the minimal sequence number **(col.4, lines 57-60, after getting checked by the PDU assembler the link list control unit, if the packet is ready will output it);** and if not the minimal sequence number, then search the reorder table for next minimal sequence number and transmit in order the packet chain associated with next minimal sequence number and continue search and transmitting next minimal sequence number and associated packet chain until the retrieved minimal sequence number and associated packet chain has been transmitted **(col.5, lines 14-27).**

It would have been obvious to person of ordinary skill in the art at the time of the invention was made to include the apparatus that keeps track of the sequence number of the corresponding entry.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shatique S. Cooper whose telephone number is (571)-270-1661. The examiner can normally be reached on Monday - Friday (7:30am -5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571)-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2616

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SSC
SC

Seema S. Rao
SEEMA S. RAO 8/3/07
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600